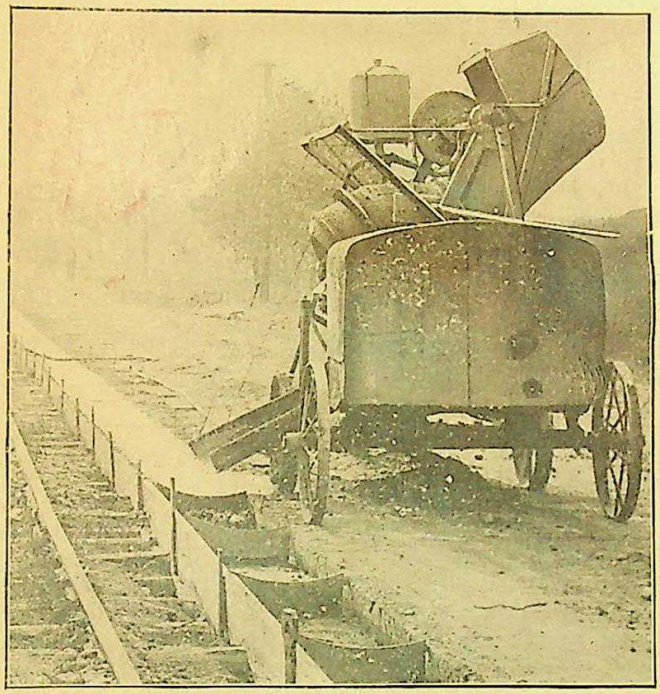
of floor if desired, a matrix in which the bricks become embedded.

A description of the mechanism in general terms reads thus: It consists of a framework of I-beams, with crossbars to support the gasoline engine. The front I-beam acts as a cutting blade, set a trifle higher than the required height for the finished foundation. To the rear, and attached to rocker arms, is a U-shaped channel iron set with the edges downward. Supported by the opposite ends of the rocker arms, and to the rear of the channel, is an I-beam, 3½ in. wide on its face, which acts as a tamper, consolidating the concrete and finishing the surface. The function of the U-shaped channel-iron is to cut and spade the concrete, thus removing all air holes and voids. The completed surface



SMALL MIXER AND METHOD OF LAYING CONCRETE GUTTER

ready for the bricklayer is thus perfectly smooth and of such firmness that it can be walked upon without injury.

Brick delivered by roller conveyors were placed immediately by hand upon this surface and rolled with a hand roller weighing about 800 lb. This roller was 30 in. wide and 24 in. high. Such a roller will be sufficient to roll the brick to a uniform surface in most cases, but, if desired, the weight may be increased by loading.

Cement grout for filling the brick was mixed by hand in a rocker box, and dumped and broomed into the joints immediately after the bricks had been rolled. The first coat was followed by a second of somewhat heavier consistency, which was mixed by hand in a box and put on with scoop shovels. As soon as the final application was completed, the pavement was covered with earth, and this protecting covering was wet down to prevent too rapid setting of the filler. This rapid sequence in operation produced a slab which was a one-piece construction.

Cost data and the distribution of the men on the concreting and bricklaying are shown in the accompanying table. The method of operation was to lay the concrete and brick with this entire gang and then use part of the gang for grouting and other work. In other words, part of the gang changed off on the work. The tabulation covers the distribution of the gang while laying the concrete and brick, but the total cost covers a day's work of concreting, bricklaying and grouting.

With this force the contractor was able to lay from 800 to 1236 sq.yd. of monolithic slab per day, which would give a manipulation cost between 18c. and 29c. per square yard, with a probable average of about 25c. The record for one gang for an eight-hour day was 630 lin.ft. of 16- and 18-ft. road, totaling 1236 sq.yd. The record made on this work would seem to indicate that a gang of this size should average about 900 sq.yd. per day. However, considerable time was lost on the templet, so that with faster delivery of concrete the work could be expedited.

After the forms were removed from the monolithic slab and the slab had set sufficiently to bear the small concrete mixer, the shallow concrete gutter was built along one side. With a mixer man and 18 laborers, this gutter was laid at the rate of 1200 lin.ft. per day. The

ITEMIZED MANIPULATION COST OF LAYING

Monolithic Brick Slab Complete, Covering One Day's Work of Eight Hours

Number of Men	Description	Amount
2	Foreman at $5.00 per day	$10.00
22	Shovelers and wheelers at $4.50 per day	99.00
5	Handling cement at $4.50 per day	22.50
4	Brick men at $5.00 per day	20.00
2	Laborers behind mixer at $5.00 per day	10.00
10	Laborers carrying brick at $4.50 per day	45.00
2	Mixer men at $5.00 per day	10.00
1	Roller-man at $5.00 per day	5.00
1	Foreman at $7.50 per day	7.50
	Total cost of gang for 8-hour day	$229.00

contour was obtained by screeding over curved steel partition plates, as shown in the illustration. The cost per lineal foot was about 90 cents.

Those connected with this work, both in the State Highway Department and the contractor's organization, consider that the road was built in record time. From the start of grading to the completion of the slab, it took 92 working days to construct 11.92 miles. During this time weather conditions held up work a number of times. Aside from this, both the mixers did not work the entire 92 days. One worked only 57 days, so that on only 57 days did both work at the same time.

The contract for this work was let to Thomas P. Fitzgerald, Ashtabula, Ohio, at a total cost of $484,000, or $421,000 for the main road construction and $63,000 for the gutter, which was let in a separate contract. The construction was under the supervision of the State Highway Department through the county officials. E. C. Blasser was division engineer in charge for the state while Ray M. Case was county engineer and was directly in charge of the work on the road.

271,542 Tons of Engineer Property Returned

Statistics issued by the War Department Dec. 23 show that the tonnage of Engineer property returned from Europe to the United States by the Army was second in the list covering all of the staff corps or services. The Ordnance Department was first with 422,000 tons (short) or 51% of the total. Next came the Engineer Department with 271,542 tons, or 32%. All other totals were comparatively small, the Quartermaster Department being third with 37,554 tons, or 5%. The total tonnage for all departments was 837,641.